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# *The* AMERICAN JOURNAL *of* MEDICAL TECHNOLOGY

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## A STUDY IN HEMATOPOIESIS: NORMAL BLOOD MENSES IN FEMALES AGES FIFTEEN THROUGH TWENTY-THREE YEARS

By SR. M. ALCUIN ARENS, O.S.B., M.T., B.S., R.N., M.S.

*From the Clinical Laboratories of St Mary's Hospital in conjunction with  
College of St. Scholastica, Duluth, Minnesota*

This study was made on fifty-one females between the ages of fifteen and twenty-three years primarily to study hematopoiesis correlatively with normal menses, and secondarily to present normal menstrual findings. Menstrual and intravascular blood determinations were made, the menstrual blood losses being measured at approximately the same time that the blood counts were studied. Sixty determinations covering 44 test subjects with single periods, five with two consecutive periods, and two with three consecutive periods were made. Iron losses due to menses were determined by Barer's\* modification of Reis and Chakmakjian's method. The iron extracted from the menses was converted into hemoglobin, assuming that all of the iron came from hemoglobin. From this calculated hemoglobin was determined the volume of blood lost, assuming the menses to have the same hemoglobin content as the test subject's intravascular blood.

The hemoglobin determinations were made in duplicate with standardized Haden-Hausser and Sahli hemoglobinometers. The experimental and calculated data are recorded in Table 1.

\*Private communication.

Achlorhydria and hematopoiesis were studied correlatively on these same individuals and reported in another paper.<sup>1</sup> There it was shown that for the limited age span and sex, gastric acidity has a very insignificant bearing on the hemoglobin level of the blood stream. Bloomfield, in his work, had recognized this earlier saying: "One may find cases of gastric acidity with the condition of the blood varying from normal to extreme anemia; one may find cases of severe hypochromic anemia with an acidity, subacidity or normal acidity,"<sup>2</sup> and he thinks menstrual bleeding is the greater etiological factor in hypochromic types of anemia in women because of the frequency with which it is seen.

Heath,<sup>4</sup> too, feels greater emphasis is to be placed on the menstrual blood loss factor in its bearing on the blood stream in puberty and the period terminating in late menstrual life. Granted the possibility that an iron deficit may be due to malabsorption still he puts considerable emphasis on cases of menorrhagia in which the excessive bleedings at menses in general are minimized because the patient "had always had it," "didn't want to trouble the doctor," "considered that she had 'a good flow'," "or because of modesty"; and builds a hypothetical chart showing to what this disregard leads. In this picture he assumes he has a female, 25 years old with normal hemoglobin, normal store of iron, but among other things an abnormal diet, and an annual menstrual iron loss twice the normal. By making the abnormalities persist until the patient reaches an age of 43 years he discovers at that age a hypochromic anemia with a hemoglobin of "38%."

Barer and Fowler,<sup>5</sup> departing from the hypothetical, show by experimental evidence that the maximal menstrual blood loss which was found in a subject selected as normal would necessitate an iron retention for each day of her regular menstrual cycle that was distinctly unusual with the average dietary intake and unless supplemented by the administration of iron would help to explain the development of certain cases of hypochromic anemia in women who disregard this loss as they advanced in age. Barer *et al.*<sup>6</sup> projecting their study to pathological cases, found even much larger losses of iron and hemoglobin in patients with hypochromic anemia even though they considered their menstrual periods normal. (Barer and Fowler<sup>5</sup> state that the patient has no criteria to judge "nor-



mal" and "abnormal" losses except by comparative uniformity of menses from one period to another but this uniformity or lack of uniformity is usually disregarded by them.)

It is obvious from Table 1 that the hemoglobin levels of none of the test subjects of this study were anemic. But the menstrual blood loss determined per period and recorded there shows the maximum for the girls studied to be 66.6 mg. iron per menstrual period. This loss would necessitate a daily retention of 2.49 mg.

TABLE 1  
BLOOD FINDINGS: INTRAVASCULAR AND MENSTRUAL

Case No.	Age Yrs.	Fe mg.	Menstrual Findings		Blood cc.	Intrav. blood	
			Hb gm.			Hb gm.	RBC mil.
7	21	29.3194	8.752		73.5	11.9	4.1
12	21	10.7568	3.169		23.7	12.5	4.3
17	21	21.8542	6.523		56.2	11.6	3.9
22	23	17.4183	5.199		39.0	13.3	4.5
23	20	27.4130	8.783		68.7	11.9	4.0
26	20	11.3984	3.402		26.3	12.9	4.1
27	19	10.4640	3.123		27.1	11.5	4.1
28	19	18.3736	5.484		48.1	11.4	3.6
31	21	31.1708	9.304		68.4	13.6	4.4
46	21	33.4780	9.691		76.3	12.7	4.1
46	21	48.6380	14.518		114.3	...	..
50	19	32.8496	9.805		82.4	11.9	4.1
62	16	19.7352	5.891		48.3	12.2	4.2
89	17	14.4630	4.317		35.6	12.1	4.3
89	17	25.4280	7.590		62.7	...	..
101	21	12.7686	3.811		29.7	12.8	4.3
102	21	15.0732	4.499		35.9	12.5	4.1
103	20	23.9424	7.087		53.6	13.2	4.5
104	20	48.4136	14.451		116.5	12.4	4.7
106	19	6.7246	2.007		16.4	12.2	4.0
106	19	19.0732	5.693		46.6	...	..
106	19	26.8116	8.003		65.6	...	..
107	20	25.1722	7.514		60.1	12.5	4.4
108	20	33.3333	9.949		80.3	12.4	4.1
109	21	13.7208	4.095		33.5	12.2	4.2
110	20	51.1056	15.255		138.6	11.0	3.7
111	19	19.1984	5.730		48.5	11.8	4.0
117	22	23.4053	6.986		55.9	12.5	4.3
117	22	7.6568	2.285		18.3	...	..
118	18	13.6732	4.015		31.4	13.0	4.4
123	21	42.1278	12.575		111.3	11.3	4.0
124	20	15.2340	4.547		36.4	12.5	4.3

Case No.	Age Yrs.	Fe mg.	Menstrual Findings		Intrav. blood	
			Hb gm.	Blood cc.	Hb gm.	RBC mil.
125	20	15.4266	4.604	36.5	12.6	4.3
126	18	16.0496	4.791	41.3	11.6	4.2
128	18	9.6704	2.886	24.4	11.8	4.0
129	18	16.3052	4.867	42.3	11.5	3.9
132	18	21.4493	6.402	60.9	10.5	3.7
135	19	24.5496	7.328	64.3	11.4	4.2
138	18	29.7639	8.884	74.0	12.0	4.1
139	17	27.2480	8.132	66.1	12.3	4.4
139	17	24.0984	7.193	58.5	...	..
140	19	17.1646	5.223	40.9	12.5	4.1
142	18	59.4280	17.739	140.8	12.6	4.6
145	18	23.1568	6.912	64.0	10.8	4.0
151	23	16.5658	4.948	40.2	12.3	4.3
151	23	21.3568	6.375	52.3	...	..
151	23	20.728	6.187	50.3	...	..
153	17	30.5528	9.060	73.6	12.3	4.0
154	23	19.6762	5.873	51.9	11.5	3.7
155	18	21.3180	6.360	50.0	12.7	4.2
157	19	18.0217	5.379	51.7	10.4	3.7
161	20	59.3814	17.728	150.2	11.8	4.2
162	20	25.3920	7.579	65.3	11.6	4.2
164	17	16.5520	4.940	38.0	13.0	4.2
169	15	7.1640	2.138	17.6	12.1	4.3
178	17	66.6370	19.891	157.8	12.6	4.5
180	18	31.0472	9.267	71.3	13.0	4.4
181	21	17.2803	5.158	40.3	12.8	4.4
197	20	5.1984	1.551	11.7	13.2	4.3
197	20	9.151	2.731	20.7	...	..

iron to replace this deficit alone and in the opinion of Barer *et al.*<sup>6</sup> an iron retention approximating that is distinctly unusual in the average normal diet. Hence, it follows that such an individual is potentially a hypochromic anemic, and if the condition persisted would become actually so.

The tendency of the group was studied as a whole by correlating the menstrual blood loss expressed in cubic centimeters per period with the hemoglobin per cent of the circulating blood. The coefficient of correlation was found to be negative 0.2074. This value is much greater numerically than the coefficient of correlation found between acidity and hemoglobin level.<sup>1</sup> However, the significance to be attached to it lies mainly in its negative nature, which implies that the greater the menstrual flow, the lower the

hemoglobin level of the blood stream. This adds confirmation to what Bloomfield arrived at by mental observation, Heath by hypothesis, and Barer *et al.* by experimental evidence.

In reviewing Table 1 certain menstrual facts are revealed which are substantially the same as those reported by Barer and Fowler.<sup>5</sup> These facts are:

1. There is no constancy in the same individual in blood loss from one menstrual period to another; Cases 139 and 151 of this study seem exceptions to this, and since they were girls of predominantly even temperament, it may be that all such are constant in this respect. There is no constancy from individual to individual.

2. There is no direct correlation between the age and the volume lost. This becomes more evident from Barer's findings since in that study individuals between 15 and 43 years of age were studied as contrasted with the younger and narrower age span of this study.

3. The range of blood (or iron or hemoglobin) lost per period is wide for the group but narrows down significantly when limited to 60 per cent (Barer's 50 per cent) of the cases as illustrated in this summary:

TABLE 2  
COMPARISON OF TWO STUDIES IN NORMAL MENSTRUAL  
BLOOD LOSSES

Data from	Mg. Fe Lost	Per Menstrual Period	
		Representing	
		(1) Gm. Hb	(2) Cc. Blood
Barer and Fowler	2.28-78.96	0.680-23.57	6.55-178.69
Remarks:	50% of the cases however lost only 23.21-68.43 cc.		
Duluth Study	5.1984-66.637	1.551-19.888	11.7-157.8
Remarks:	60% of the cases however lost only 24.4-56.2 cc.		

4. It becomes obvious that the minimum of 11.7 cc. and the maximum of 157.8 cc. blood loss for any single period is abnormal.

#### Summary

1. The greater significance in a study of hematopoiesis for females between fifteen and twenty-three years of age seems to be the iron loss by menstrual flow rather than the acidity of the stomach. A maximum menstrual loss of 66.6 mg. iron per period was found. According to the best authorities this loss is not bal-

anced by iron retention from normal dietary intake alone and hence becomes a potential etiological factor for hypochromic anemia.

2. When correlating the menstrual blood loss in cubic centimeters against the grams per cent of intravascular hemoglobin the coefficient was found to be a negative 0.2074, which shows that the greater the menstrual flow, the lesser the hemoglobin level of the blood stream. (In another paper it was shown that the greater the blood volume, the greater the loss of menstrual blood.\*)

3. There is no constancy in menstrual blood loss from individual to individual nor from period to period in the same individual.

4. There is no direct relation between age and the volume lost.

5. A summary, Table 2 above, of the menstrual blood findings from this study are compared with work done by Barer and Fowler. Without trying to define normal values it seems obvious that the extreme menstrual losses given there, viz., volumes in the neighborhood of 10 cubic centimeters and 150 cubic centimeters per single period are definitely abnormal. Sixty per cent of the cases had a loss between 24.4 and 56.2 cc.

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Grateful acknowledgment is made to all those contributing to this study.

\*In the press.

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## GASTRIC ASPIRATION CULTURE AND THE CONTROL OF TUBERCULOSIS\*

By SYLVIA V. ANDERSON, M.T.

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Tuberculosis control will be made more effective when culturing of gastric aspirations is adopted as routine procedure by every laboratory in which there is a department of bacteriology. The results obtained in tuberculosis hospitals carrying out a consistent culture program on fasting stomach contents of patients indicate that if the practice would be universally adopted by clinics and general hospitals, large and small, it would greatly increase the security of patients, their relatives and visitors, hospital personnel, and the community at large. Plunkett and Mikol<sup>2</sup> estimate that there were probably more than 40,000 unrecognized cases of tuberculosis hospitalized in United States in 1937, or about 1.2% of the total hospital admissions. Farber and Clark<sup>1</sup> call attention to the fact that "tuberculous patients commonly suffer from associated condition for tuberculosis is antagonistic to few disease processes." In a report by the latter of 100 patients admitted to a general hospital with non-tuberculous diseases and later found to have tuberculosis, 81% had far advanced tuberculosis. The majority were suspected on the basis of symptoms rather than physical signs. Some of them had only tuberculosis and did not have the disease recorded at time of admission. On the basis of Plunkett and Mikol's<sup>2</sup> study an additional 300 tuberculous patients probably remained on general wards in the same hospital and were eventually discharged without ever having been diagnosed as tuberculous. Obviously much more careful investigative work could be done if the medical staff were more tuberculosis minded and the hospital laboratories were equipped with the facilities and the skilled technologists.

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\*Presented at the Annual Meeting of the American Society of Medical Technologists, June 11, 1944, Chicago, Ill.

Culturing of gastric aspirations and/or other suspected material accomplishes two major objectives:

1. Discovery of minimal or symptom-free cases at a stage of development when the prognosis is most favorable;
2. Continuous hospitalization of tuberculosis victims until they are no longer infectious.

From a third to a half of sanatorium patients produce little or no sputum. Nobody knows the proportion of unrecognized cases at large who are without sputum. The presence or absence of sputum depends upon the age, sex, mentality, and habits of the individual, and upon the location of the lesion, and on the stage of advancement and degree of activity of the disease. More minimal cases enter the sanatorium during peacetime than during the war. They are hospitalized because of contact with the tuberculous at school, at home or at work; or because of suspicious x-ray pictures or positive tuberculin reactions.

Gastric aspirations from patients, in and out of the hospital, have been cultured extensively at Muirdale Sanatorium since 1939. The results have furnished valuable information for diagnosis and treatment. In the recent literature Steemkin, Yaeger, and Heise<sup>3</sup> conclude, "When tubercle bacilli are difficult to find, persistent and careful bacteriological studies should be made of the sputum and gastric contents, especially by culture and animal inoculations." Robinson and Dunn<sup>4</sup> advise the same measures.

In our hospital the physicians, assisted by the nurses, collect the fasting stomach contents. A small calibre, flexible rubber tube is inserted through the nasal passage and into the stomach, shortly after the patient awakes in the morning. Tubercle bacilli swallowed during sleep are thus recovered before the stomach becomes active. Sometimes a few cubic centimeters of saline or sterile water is used to facilitate. It is desirable to keep the volume of the specimen under 50 cubic centimeters. The majority of those we examined were from 15 to 20 cubic centimeters. The same 50 cc. round bottom pyrex centrifuge tube with constricted neck, fitting size 0-0 rubber stopper, serves for collection and for subsequent preparation for culture.



*Technic*

Enough KOH solution is mixed with the material to make a concentration of 1½% hydroxide and the mixture is kept at 40 degrees Centigrade for 30 minutes or long enough to become warm. This treatment dissolves the protein of elastic fibers, body cells, and mucus, kills the contaminating bacteria except resistant ones such as tubercle bacilli and spores, and makes a finely divided suspension, suitable for centrifuging.

The liquified specimen is centrifiged at high speed for 20 minutes, decanted and re-suspended in a few cubic centimeters of saline. A drop of brom-cresol-purple solution is added before neutralizing with 5% HCl. By pouring off the fluid before addition of acid, one avoids re-precipitation of protein. Keeping the solids finely divided makes possible a smoother smear and a more evenly distributed culture slant.

The neutral residue is washed and re-centrifuged in about 40 cc. of saline, after which it is ready for smear, culture, and/or animal inoculation. Use the entire sediment.

We are staining smears by the Petroff-Schain<sup>5</sup> modification of Ziehl-Neelsen, and find it very economical of time and dyes, especially if 10 or more smears are to be stained. Recently an improved method using propylene glycol as a solvent<sup>6</sup> has come to our attention.

If no organisms are found by smear or if they were seen for the first time on the concentrated smear of any patient, the remainder of the concentrate is divided among three slants of Petraghani's medium (modification used in laboratories of Ontario Department of Health) in tubes 155 x 17 mm. The tubes are incubated in a nearly horizontal position until no moisture is visible on the surface of the slant (usually 48 hours). Then the tubes are sealed a 2:1 paraffin-vaseline mixture to prevent excessive drying of the medium and the incubation continues for a period up to 8 weeks, or until colonies appear. When microscopic growth appears, smears are always made on any first positive and as often thereafter as common sense dictates to avoid errors in judgment.

A word about smearing and staining colonies is apropos. The slide is warmed, a small drop of water is placed in the middle. A

long, pointed inoculating needle is used to fish out a small crumb of growth. The end of the needle is rotated in the droplet of water. As the water evaporates, the particle is rubbed back and forth to make it adhere to the glass.

Culture smears are best stained individually to avoid possible contamination of negative smears in the same batch. Alcoholic solution of carbol fuchsin with a few crystals of pure sodium chloride sprinkled over the dye, is preferable to steaming with a flame.

While no tabulated account was made of the number of colonies appearing on positive cultures, it is safe to say that those having more than 10 were the exceptions and that there were more positive cultures being reported with fewer than five colonies than with more than five. It is common to find only one slant out of three with growth. For every patient with a positive culture, the colony or colonies in question were smeared and stained at least once. Whenever any quality of a growth, as observed grossly or microscopically, appeared to vary from the usual this colony was tested by sub-culture for ability to grow at room temperature, or ability to grow in the incubator in a shorter period of time than pathogenic acid-fast bacilli require. It was rarely necessary to use guinea pig inoculation to clear up doubts about pathogenicity, but animal inoculation is recommended for the inexperienced worker dealing with doubtful colonies. No instance of mistaken diagnosis due to fallacious positive report has come to our knowledge.

#### *Results of the Cultures*

These counts and statistics are based on 3,000 some gastric aspirations made on about 800 Muirdale Sanatorium patients from Jan. 1, 1942, to Jan. 1, 1944. Some patients had only one test, the majority had several.

There were a total of 3,038 smears stained and read, of which 2,891 were negative for tubercle bacilli and 147 were positive. This proportion shows that for gastric aspiration, concentrated smears alone are not fruitful.

The 2,891 sediments having negative smears were cultured, plus another 91 specimens, some of which were without smears because of insufficient material and some of which had positive smears which it was deemed advisable to verify. Accordingly, a total of

2,982 cultures were harvested. Of this number, 2,163 gave negative cultures, 783 were positive, and 36 were failures because of contamination. It should be remembered that tuberculous individuals do not have consistently positive gastric cultures, especially while their condition shows improvement. Since January, 1944, we have put into practice a system of pooling a series of consecutive gastric aspirations from the same patient. The majority have five tests done and these are treated, smeared, and cultured as one specimen. It will be interesting to observe to what extent the pooling procedure will change the ratio of positive and negative cultures.

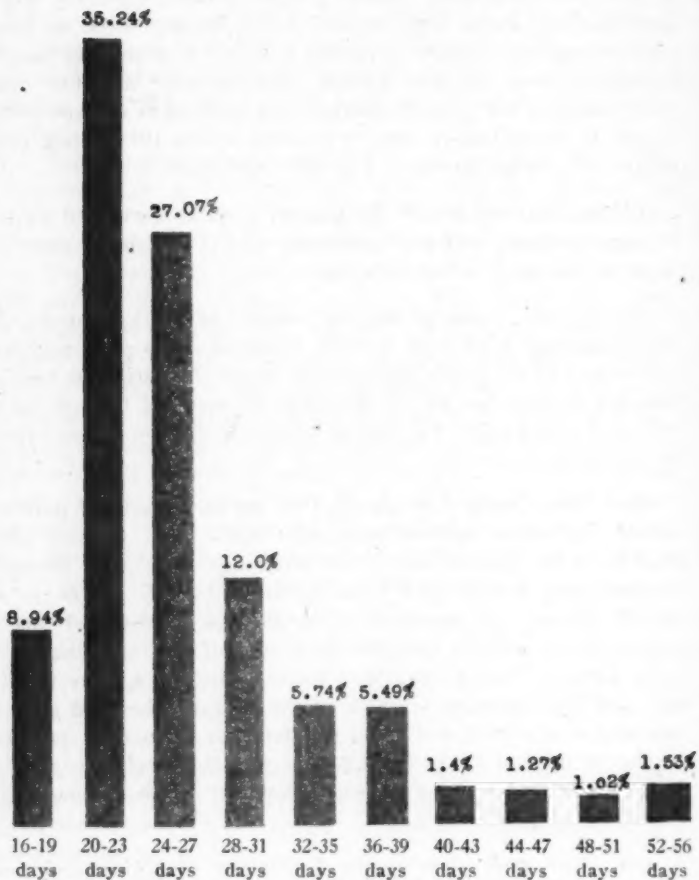
Of the total number of 783 positive cultures mentioned above, 68 were associated with positive smear and 715 had shown negative smear or no smear before culturing.

On the other hand, of the total number of 2,163 negative cultures obtained, 2,141 were derived from specimens with negative smears and 22 from specimens whose smears had acid-fast bacilli. One can assume that the 22 discrepancies occurred because some tubercle bacilli are less resistant to hydroxide solution and so failed to survive the treatment.

It is interesting to note that in 1941 the percentage<sup>7</sup> of positive gastric aspirations cultures was only 16.8% as compared with 26.25% at the present time. The percentage of failures through contamination has dropped from 3.3% to 1.206% in the same period. There is no reason to believe that the incidence of tuberculosis among patients aspirated prior to 1941 was less than it is now. Certainly our doctors have learned to make a more intelligent and discriminating selection of the patients who need gastric aspirations. However, a share of the credit for the notable increase in the proportion of positive gastric aspiration cultures rightly belongs to a new and more efficient incubator which was installed in the fall of 1941.

One more study showing the distribution of positive cultures through the incubation period follows. The earliest colonies appear in about 16 days. The largest number are reportable in the 20 to 23-day period. Approximately 89% of the positives have been reported by the end of the fifth week. The average length of time

DISTRIBUTION OF  
POSITIVE GASTRIC ASPIRATION CULTURES



About 89% of positives are reported by end of five weeks.

Twenty-five days is average period required for positive culture.

(Based on a study of 783 positive cultures on Muirdale Sanatorium patients over a two-year period.)

required for positive cultures was 25 days. The accompanying graph shows percentages for each four-day interval, beginning at 16 days. Obviously then, the average positive culture is reportable in one-half the time a positive guinea pig test requires. The chick embryo method is the fastest of all, if one counts the age of the embryo at the time of inoculation, about 15 days.<sup>3</sup> I have great admiration for the pioneer work which technologists Gallagher and Kurachi did with chick embryos as reported in their paper at the 1943 convention. Perhaps the chick embryo method will some day be developed to a point where it will be practical for wide-scale culturing for human type tubercle bacillus.

### *Summary*

At Muirdale Sanatorium, a hospital of about 600 beds, gastric aspiration cultures have proved to be one of the most trustworthy laboratory tests in diagnosing the early symptom-free cases of tuberculosis and in determining when the treated can safely be discharged from the hospital. Our own success suggests that culture of fasting stomach contents should be given a place in the bacteriological laboratories of general hospitals. These institutions would thereby be contributing toward a more concerted effort to check the spread of tuberculosis.

### *Note*

Grateful acknowledgment is made to my co-workers, Miss Mary K. Warren and Miss Zita M. Pieper, without whose valuable assistance this work could not have been accomplished.

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## PENICILLIN\*

By FRANKLIN C. MASSEY, A.B., M.D.†

### *Introduction*

Penicillin is one of a group of agents known either as antibiotics or as metabolites. These are extracts of fungi or of bacteria and include: (1) gramicidin, (2) tyrocidin, (3) actinomycin, (4) citrinin, (5) penicillic acid, (6) streptothricin, (7) gliotoxin, (8) proactinomycin, (9) tyrothricin, (10) fumigacin, (11) clavacin and (12) *penicillin*.

### *Discovery*

In 1929 Professor Alexander Fleming, who was working in his laboratory in London investigating variants of pathogenic strains of staphylococcus aureus, observed that upon some of his culture media certain colonies of bacteria were inhibited in their growth by the presence of a contaminating growth of mold known as *penicillium notatum*. Quite by accident the mold contaminants effectually fell upon the plate during the time of their exposure to the open air in the routine course of transfer of bacterial colonies. Such contamination is common; and the phenomenon of bacteriolysis was observed many times before this. But only to Fleming's imaginative mind did the thought occur that in this particular phenomenon might there exist some basically useful principle to be applied either experimentally or clinically. Hence he conducted a very simple but basic experiment with this same mold.

### *Basic Experiments*

This first experiment was to make a troughed plate of meat broth extract agar containing on one side a shallow trough in which

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\*Presented to the Pennsylvania Society of Medical Technologists, Philadelphia County Medical Society Building, January 8, 1945, and to the Philadelphia Society for Clinical Research, Hotel Warwick, December 27, 1944. Reprinted from *The Hahnemannian Monthly*.

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were placed seeds of penicillium, then, with streaked cultures of staphylococci, hemolytic streptococci, pneumococci, gonococci and bacillus diphtheriae. Additionally, he streaked the plate with *E. coli* and *B. influenzae*. Upon examination of the experimental culture plate sometime later he noticed that within a particular zone radiating from the penicillium seed trough some of the colonies of bacteria were inhibited in their growth whereas others multiplied uninhibitedly. Specifically the following organisms showed effects of penicillium notatum: In the staphylococci, hemolytic streptococci, pneumococci, gonococci, bacillus diphtheriae lysis was shown. There was no evidence of lysis toward *E. coli* or *B. influenzae*. Based upon this simple observation, Fleming concluded that the mold elaborated a lytic agent against certain bacterial strains; to this powerful anti-bacterial substance he gave the name *penicillin*.

#### *Initial Clinical Application*

While sulfa therapy was being born and nurtured, the extremely interesting observation relative to penicillin went by unnoticed except to a small minority of investigators who regarded the substance as a laboratory curiosity. Nothing was done in the interval of ten years, from 1929 to 1939 therefore, because of the overwhelming interest in the problem of sulfanilamide and possible derivatives of this drug. Subsequently, in 1940 a group of workers in the Oxford University reported successful laboratory experiments with penicillin in the treatment for infections caused by the "Clostridial group" (*clostridium welchii*, *clostridium oedematiens*, *corynebacterium diphtheria*, *clostridium septicum*, *streptococcus pyogenes*, *streptococcus viridans*, *streptococcus pneumoniae*, *staphylococci*). Shortly thereafter concerted attention was focused upon a report in which it was noted that in ten cases of sulfanilamide-resistant infections, penicillin therapy was found to be signally effective. A previously published book on the anti-bacterial effect of an extract of a soil bacillus proving lytic toward gram positive cocci (Dubos and his associates, 1939) also did much to revive interest in the subject of anti-bacterial agents of biologic origin. The development of penicillin from 1941 onward was extremely rapid and it was not long before a standard unit was developed as a means of measuring penicillin. Florey or Oxford Units was the name employed for the standard measure of the anti-bacterial potency of penicillin.

An Oxford Unit is that amount of penicillium which when dissolved in 50 cc. of the meat extract broth, inhibits completely the growth of the test strain of the staphylococcus aureus. Bioassay is the only method of standardization available at this writing. Obviously a chemical test is necessary to attain predictable uniformity, but until this result is forthcoming bioassay affords an adequate and practical manner of measure.

#### *Mode of Action*

Penicillin is innocuous to the body tissues. Certainly it is not a protoplasmic poison. It accomplishes its anti-bacterial influence by inducing certain metabolic changes in bacterial organisms; also by interfering with normal biologic processes and reproduction. Greatest effectiveness is manifested against gram positive bacteria whereas little or no effect is obtained toward gram negative organisms. Gram negative cocci, however, are especially sensitive to the effect of penicillin. Bacterial effects of penicillin have been observed by many workers in the field.

In comparison to the sulfonamides, penicillin is not inhibited or inactivated by the presence of: (1) pus, (2) blood, (3) tissue autolysates nor by (5) the numbers of organisms.

#### *Fate in Vivo*

A few basic facts concerning the fate of penicillin in vivo must be borne in mind. Penicillin is rapidly excreted by the renal tubules so that a maximum blood level has been reached within fifteen minutes after one injected dose. "Half of the absorbed penicillin is excreted by the kidneys or otherwise removed from the circulation within the first 15 minutes." Sixty per cent of an injected dose is excreted by the kidneys within one hour of intravenous injection. By the end of this time, the penicillin concentration of the blood stream falls to zero (2 hours). So we have here the reason for the frequent multiple injections of this agent which incidentally constitutes one of the most objectionable features and mitigates against its employment by physicians outside of hospital practice. Efforts at the present time are being directed toward finding a method by which penicillin may be given either at much longer time intervals or, for instance, in a single dose daily, by combining penicillin with a substance, innocuous to the body tissues, which is

retained for an appreciable length of time. Several such substances are available. The first of these is protamine zinc insulin. Diodrast and p-amino hippuric acid (hippuran) are two substances which satisfy the necessary qualifications.

#### *Delayed Excretion*

Both of the latter are excreted mainly by the renal tubules and this very rapidly, hence on this precept, effective blockading of penicillin excretion could be achieved by effecting a mutual depression of tubular excretion by establishing a "contest for priority" for use of this route of elimination. A certain degree of success has accompanied such attempted efforts to combine penicillin with these substances providing an elimination delay of several hours. Roman-sky and others gave injections of 50,000 units of penicillin in 2 to 2.5 cc. of a peanut oil mixture and by this means obtained an effective therapeutic blood titer for 6 to 7 hours: urinary excretions continued for 20 to 32 hours.

Penicillin is not inhibited or inactivated by pus, blood, serum, tissue autolysates or the number of organisms present. Nor is its activity diminished appreciably by bacterial extractions, or p-amino-benzoic acid. As has been mentioned previously, this is in some contrast to the sulfonamide drugs.

Penicillin is absorbed quite rapidly in some tissues whereas in others there is no appreciable quantity of penicillin concentration. Absorption is very rapid after intramuscular injection, rapid after subcutaneous injection, rapid following intraduodenal instillation. Slow absorption occurs from the pleura or from body cavities. Oral absorption is very slow as is also absorption from the rectum. There is no penetration of penicillin from the blood to saliva or into the tears.

As of March, 1944, it was thought there was no penetration of penicillin into the cerebrospinal fluid. However, in a case of pneumococci meningitis on the Medical Ward service of the Hahnemann Hospital in February, 1944, we observed that there was penetration from parenteral administration. Subsequently, Rosenberg and his associates found that after intramuscular or intravenous injection of 20,000 to 40,000 Oxford Units of penicillin, contrary to previous expectation, a considerable amount of penicillin was absorbed by the spinal fluid of patients suffering from meningococcic meningitis.

It was concluded "that the excretion (or extravasation) of penicillin into the spinal fluid of meningitis patients after intramuscular or intravenous injection of sufficiently large doses is adequate for the control of meningitis due to susceptible organisms, without the necessity of a supplementary intrathecal injection." (October, 1944.)

### *Penicillin Sensitivity and Penicillin Resistivity*

Florey, Hobby, Meyer and Chaffee, et al., after bacteriological studies, listed pathogens according to their reaction toward penicillin; that is, organisms were either susceptible to the lytic effects of penicillin or showed no changes at all in its presence and hence were called insusceptible. A list of the organisms is herewith presented:

#### **Susceptible Organisms**

Diplococcus pneumoniae  
Streptococcus pyogenes  
Streptococcus salivarius  
Micro-aerophilic streptococci  
Staphylococcus aureus  
Staphylococcus albus  
Neisseria gonorrhoeae  
Neisseria intracellularis  
Actinomyces bovis  
Bacillus anthracis  
Bacillus subtilis  
Clostridium botulinum  
Clostridium tetani  
Clostridium perfringens (welchii)  
Corynebacterium diphtheriae  
Vibrio comma  
Micrococcus  
Streptobacillus moniliformis  
Borrelia novyi  
(spirochete of relapsing fever)  
Treponema pallidum

#### **Insusceptible Organisms**

Eberthella typhosa  
Salmonella paratyphi  
Salmonella enteritidis  
Shigella dysenteriae  
Proteus vulgaris  
Pseudomonas aeruginosa  
(Bacillus pyocyaneus)  
Pseudomonas fluorescens  
Serratia marcescens  
(Bacillus prodigiosus)  
Klebsiella pneumoniae  
Haemophilus influenzae  
Escherichia coli  
Staphylococcus albus  
(some strains)  
Micrococcus albus  
(some strains)  
Monilia albicans  
Monilia candida  
Monilia kruzei  
Blastomyces  
Mycobacterium tuberculosis  
Streptococcus faecalis

### *Solutions of Penicillin*

In general, it may be stated that penicillin (that is, the sodium, calcium or ammonium salt of penicillin) may be dissolved in any

type of solution suitable for parenteral administration with the exception of amino acids. (Penicillin's activity is greatest in a pH of  $6.5 \pm 0.5$ ). However, most generally penicillin should be used dissolved in a solution of normal saline. Other types of solvents which may be employed efficaciously are sterile, distilled, pyrogen-free water, 5 per cent glucose in saline, 1/6 molar sodium lactate, Ringer-lactate, Ringer's solution and Hartman's solution.

### *Toxicity*

The bactericidal-cytotoxic ratio is very high: that is, while its anti-bacterial effects on susceptible strains is very pronounced, at the same time penicillin is in no way toxic to the body tissues. This is true even where very large doses of the drug are employed. There are some untoward reactions which may occur in the course of ordinary administration of penicillin. First of these is a burning discomfort at the immediate site of injection. This depends upon two factors: (1) the injection-depth to which the needle is plunged and (2) the purity of the product. Upon deeper injection there is a tendency for less discomfort probably merely due to the histologic fact that fewer nerve endings carrying sensations of pain are present in the tissues as we proceed downward from the epidermis to the muscle bellies. A thrombo-phlebitis at the site of injection is noted infrequently but only occurs when the penicillin has been given in a glucose solution. To relieve this complication simultaneous additions of 5 per cent sodium citrate may be added in several cc. quantities to the stated dose. Other reactions include, chills, fever, chills and fever, headache, head-flush, tingling sensations in the testes, skin burning and parosmia. All of these undesirable side-reactions seem to be closely related to the particular brand of penicillin used and are more or less frequently related to the purity of the product or to its peculiar method of preparation.

### *Allergy*

Urticaria formerly was thought to be a transient phenomenon of hypersensitivity because after 24 to 48 hours skin tests were negative and heterophile antibody tests uniformly were negative but Lyons, in December, 1943, reported a 15.7 per cent incidence of urticaria in 209 cases treated with penicillin in army hospitals. Criepp reported a case of bona fide penicillin allergy in which exten-



sive laboratory tests indicated the presence of immune bodies (reagins and precipitins) in the serum of the patient injected with penicillin. He considers this reaction a form of allergy and is analagous to the drug or serum types. He felt further, that the allergy was not manifested toward penicillium spores which are commonly present in the air. Penicillium spores constitute 11 per cent of the fungus spore content of the air in the middle western states of this country. Feinberg has studied this latter problem with results which indicate that penicillin could be tolerated by an average penicillium-sensitive patient in doses of at least 500,000 units.

#### *Methods of Administration*

Although the most popular and perhaps the most convenient method today is that of intramuscular injection, almost any type of administration is open to penicillin therapy. It may be used by continuous or intermittent intravenous drip, subcutaneous injection, bone marrow drip injection, intracisternally, intrathecally and by various other local techniques; also intrapleurally, intraperitoneally, intraduodenally and topically. Scarcely is there a reason, then, for being unable to give penicillin to a patient in whom the drug is indicated despite the status of the patient at the time.

#### *Clinical Use Today*

It is beyond the scope of this paper on the basic fundamentals of penicillin and its use to list here individually dosage schedules and even diseases for which it is considered (a) drug of choice, (b) a drug of some value, (c) a drug for experimental application. Many excellent reports and lengthy papers are available readily for consultation in each specific instance.

A summary of penicillin as of February, 1945, would conclude (a) penicillin is of established value in certain diseases which have been heretofore inadequately benefited by other drug agents; (b) it offers encouraging hopes for the treatment of certain sulfonamide-resistant or sulfonamide-sensitive cases; (c) much more work is necessary to evaluate thoroughly its place in drug therapeutics in diseases such as tertiary syphilis and subacute bacterial endocarditis.

While penicillin aptly has been termed "yellow magic" it leaves many features of a panacea to be desired. Truly it is a therapeutic howitzer if it is used judiciously and with proper indications.

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## **ABSTRACTS**

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### **FILARIASIS IN SOLDIERS ON AN ISLAND IN THE SOUTH - PACIFIC: T. D. Englehorn & W. E. Wellman, Am. Jr. Med. Sci., Vol. 209, No. 2, Feb. '45, Pp. 141.**

This report is based on observations of 127 soldiers who contracted this disease. As no adequate information for the early diagnosis was available, a compilation of symptoms observed in these men before diagnosis is given. The incubation period was very variable, apparently from 3 to 14 months. Laboratory facilities were limited but blood counts were made. In early cases they were normal but in 2-3 weeks' illness 44% showed more than 4% eosinophiles. Maximum eosinophile count was 44%. Thick smears on 100 patients showed no microfilaria.

Incidence among the different units varied with their proximity to native villages and with the mingling of soldiers and natives at work. The hospital was most closely connected with natives and showed an incidence of 50% in a year. A unit stationed five miles from the village developed only a 6% incidence in a year. That the disease was transmitted only during the day seemed evident from the fact that the evening contacts with natives were approximately equal for all troops because of moving pictures, dances, etc. Blood smears on 100 natives showed 40% positive but no periodicity, parasites occurring at night in as great numbers as during the day.

*Aedes scutellaris*, a day-biter, was the apparent vector. Neither microfilariae or adult worms were ever found in any of the soldier patients. Development of elephantiasis is thought unlikely because reinfection was avoided by evacuation to the United States.

### **SKIN BACTERIA, THEIR LOCATION WITH REFERENCE TO SKIN STERILIZATION: D. L. Lovell, Surg., Gyn. & Obstet., Vol. 80, No. 2, Feb. '45, Pp. 174.**

There are two main groups of skin bacteria, the transient which may be any bacteria picked up on contact, and the resident, which

generally include *S. albus* and *S. citreus*. The transient organisms are readily removed by the usual cleansing methods but the resident are not.

Excised skin from various parts of the body were cultured to increase the number of organisms. One set of samples was obtained from routine operations under bactericidal irradiation and the second set from cadavers without cleaning. In a third set material taken from cadavers was smeared with cultures of *S. aureus*. Incubation varied from 2 to 24 hrs. Tissues were then fixed in Zenker's fluid, sectioned and stained for bacteria. A 6-hour incubation period was most satisfactory.

The resident bacteria were found so deep in the hair follicles and sebaceous glands that they could not be removed by ordinary mechanical means. Common antiseptics do not penetrate sufficiently deep to reach these organisms. These organisms rise to the surface during an operation or injury, multiply and then constitute an important source of wound contamination.

**PERSISTENT VOMITING DUE TO GIARDIASIS: M. Weingarten & S. Rosenfeld, *Am. Jr. Diges. Dis.*, Vol. 12, No. 2, Feb. '45, Pp. 54.**

This patient suffered intervals of persistent vomiting following every meal. There was no weight loss and no nausea or pain associated with it. Since no cause could be found, this was thought to be of psychoneurotic origin. All observations made on admission were within the normal except that X-rays by the Graham-Cole method showed a moderately large gall bladder which did not empty sufficiently after a fatty meal. This led to a Lyons-Meltzer drainage. The three specimens obtained showed normal color response but all were filled with motile *Giardia Lamblia*. Atabrine 0.1g. three times daily was administered for five days. Vomiting ceased promptly and there were no other gastrointestinal complaints. Two weeks later gall bladder drainage was negative for *Giardia*.

**HYDROCHLORIC ACID THERAPY IN ACHLORHYDRIA: E. Frankel, *Am. Jr. Diges. Dis.*, Vol. 12, No. 1, Jan. '45, Pp. 15.**

Titration were carried out on various dehydrated foods treated with HCl. It was found that many foods had considerable HCl-

combining power. Ten patients with achlorhydria were also studied. Rehfuess test meals were used and 4 cc. dil. HCl were added to the meal. Eight showed complete achlorhydria in all samples and the other two only very slight rise in HCl.

This work confirms previous findings that it is not possible to administer enough HCl to achlorhydric patients to raise the free HCl of the stomach. Beneficial results following administration of HCl are thought to be due to results other than the raising of free HCl.

**PARACOLON BACILLI:** M. Michael, Jr., & V. T. Harris, *War Med.*, Vol. 7, No. 2, Feb. '45, Pp. 108.

Results of culture study of 53 strains of paracolon bacilli isolated from fecal specimens are given. These organisms fermented lactose slowly, incompletely or not at all. Their cultural characteristics varied greatly. Normally these organisms apparently caused no difficulty but under conditions of poor sanitation or poor health, there was evidence that they might cause acute gastroenteritis.

**TOTAL PANCREATECTOMY, TOTAL GASTRECTOMY, TOTAL DUODENECTOMY, SPLENECTOMY, LEFT ADRENALECTOMY & OMENTECTOMY IN A DIABETIC PATIENT, RECOVERY:** A. Brunschwig, H. T. Ricketts & R. R. Bigelow, *Surg., Gyn. & Obstet.*, Vol. 80, No. 3, March '45, Pp. 252.

This patient's diabetes is considered as not due to tumor destruction of the pancreas even though subsequent surgery disclosed that cancer of the body of the pancreas had involved the stomach and left adrenal gland and had metastasized to the omentum and the glands of the lesser curvature. The entire mass was removed. The patient recovered and two and one-half months later was ambulatory but was retained for metabolism studies to be published later. Three and one-half months after operation the patient died of abdominal carcinomatosis.

The autopsy revealed no pancreatic tissue anywhere in spite of the fact that during the post operative period the patient's diabetes had not increased and had at times improved. The relationship between diabetes mellitus and the pancreas in this case raises many questions.

**TWO CASES OF PULMONARY ACTINOMYCOSIS: A. G. Watkins, Arch. Dis. Childhood, vol. 19, No. 99, Sept., '44, p. 143.**

Two cases are reported in which actinomyces were found in pus obtained from the chest following respiratory illnesses in 2 small children. One received sulfapyridine and sulfadiazine and the other received sulfathiazole. Both recovered. In both cases the organism could not be recovered on successive taps but it was thought wiser to continue the drugs until clinical improvement was established especially since there were no signs of adverse reactions to the drugs.

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**SULFONAMIDES AND PHAGOCYTOSIS: L. Gershenfeld and M. J. Silver, Am. Jr. Pharm., vol. 116, No. 1, Jan., '44, p. 4.**

The 6 preparations tested, Sulfanilamide (Merck), Sulfapyridine (Merck), Sulfathiazole (Lilly), Sulfadiazine (Amer. Cyanamide Co.), Sulfaguanidine (Sharp & Dohme), and Succinylsulfathiazole (Sharp & Dohme) were made up in various concentrations but in each instance the greatest concentration was the limit of solubility of the drug. The method of Welch & Hunter was used to test the effect on phagocytosis in human blood in vitro.

The results showed these drugs fell into 2 groups. Sulfanilamide, sulfathiazole and sulfadiazine showed a variable increase in the number of leucocytes showing moderate and marked phagocytosis and a slight decrease in the number showing no phagocytosis. Sulfapyridine, sulfaguanidine and succinylsulfathiazole slightly decreased the number of leucocytes showing moderate and marked phagocytosis and slightly increased the number showing no phagocytosis.

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**SYPHILIS TRANSMITTED FROM A CONGENITALLY SYPHILITIC CHILD TO HIS OWN FATHER: H. Ingraham and A. Hesse, Am. Jr. Syph., Gon., & Ven. Dis., vol. 28, No. 6, Nov., '44, p. 733.**

This child was apparently well until approximately 1 month old when it began to lose weight and develop snuffles, a hoarse cry and a generalized rash. The father frequently cared for the child and among other things, applied white petroleum jelly about the child's



nose. During this time he himself developed a mild rhinitis and used of this same petroleum jelly, applying it about the nose and up to the eyelid.

Shortly thereafter the child was hospitalized. The mother and child both showed strongly positive Wassermann reactions while that of the father was negative.

While the child was still in the hospital, the father was struck in the eye by a cow's tail and subsequently developed a purulent conjunctivitis. Lymph nodes began to swell and a rash appeared. All treatment to the eye had been unsuccessful. A Wassermann was now found to be positive. Specific treatment was begun and the patient's eye as well as his general condition began to improve.

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**INFECTIOUS GASTRO-ENTERITIS: AN EPIDEMIOLOGIC AND LABORATORY STUDY: E. C. Rosenow, Am. Jr. Diges. Dis., vol. 11, No. 12, Dec., '44, p. 381.**

This is a survey of 15 outbreaks of gastro-enteritis not associated with respiratory tract infections. Eight occurred in institutions and 7 in private homes in the same city. No deaths occurred and recovery was usual in 24-48 hrs., except for continued weakness. The outbreaks closely resembled food intoxication due to staphylococci but these organisms were not isolated.

Observations in the homes revealed a history of lack of water pressure with resultant suction of air in each instance.

Cultures made of the water supplies showed streptococci resembling those isolated from persons ill during epidemics of gastro-enteritis and respiratory infections. Strains isolated during the outbreaks produced diarrhea and lesions of the alimentary tract in inoculated animals.

Three outbreaks are described in detail. Streptococci or diplostreptococci were isolated from the patients, their water supply and the air of their rooms. Ordinary media did not detect them and they bore no relation to routine water examination findings. Secondary or late cases were thought to be due to a filterable infectious agent derived from the streptococcus or diplostreptococcus.

## BOOK REVIEWS

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**TECHNICAL METHODS FOR THE TECHNICIAN** by Anson Lee Brown, A.B., M.D., Director of Brown's Clinical Laboratory, Columbus, Ohio. Third Edition, 1944, Pp. 706, The College Book Co., Columbus, Ohio. Price \$10.00.

This volume is a compilation in detail of technical methods which have been found satisfactory in the author's laboratory. It is also devised as a teaching manual for clinical laboratory technicians. At the end of each of the six parts a large number of questions are asked which, if the technician can answer them all correctly, quite thoroughly covers the subject matter of each of the six parts. The first four pages are rules for laboratory behavior and ethics. Part One describes the microscope in simple detail, its use and care. Laboratory operations in general are discussed in Part Two. Quantitative, qualitative, microscopic and other urine examinations are taken up in Part Three. In Part Four the bulk of the book is devoted to blood examinations including the blood count, chemistry, serology, agglutination and miscellaneous blood tests. In the section on blood counts the author has made a real effort by means of diagramatic and excellent colored plates to teach the technician distinguishing features of the differential count. This section is closed with 390 questions based on the text. In the section on serology eight methods for testing for syphilis are given including the author's test which is simple and inexpensive and compares very favorably in accuracy with other methods in over 4,000 cases. The antigen has been checked against more than 50,000 bloods from all parts of the country. In addition to greater accuracy in reading the test microscopically the author claims nine other advantages over other tests. The method of making the antigen and sensitizer is given in complete detail with illustrations. Parts Five and Six are given to miscellaneous examinations, tissues and important laboratory data. The book is profusely illustrated with drawings to impress the technician with the importance of certain steps and for

other teaching purposes. Throughout the work each step in every procedure is numbered and given precisely. One might say the book is a laboratory guide, a teaching manual, a dictionary and a reference work rolled into one.

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**APPROVED LABORATORY TECHNIC** by John A. Kolmer, Professor of Medicine in the School of Medicine and the School of Dentistry, Temple University; Director of the Research Institute of Cutaneous Medicine, and Fred Boerner, Associate Professor of Clinical Bacteriology, Graduate School of Medicine and Assistant Professor of Bacteriology, School of Medicine, University of Pennsylvania; Bacteriologist, Graduate Hospital, Philadelphia. Fourth Edition, 1088 pages, 1945. Price \$10.00. D. Appleton-Century Co., Inc., New York 1, N. Y.

This well known and popular book on laboratory technic has been largely rewritten, revised, enlarged and reset in fourth edition. Collaborators to the number of thirty are acknowledged in this new edition but due to current conditions only a few of them have been able to participate in the revision, hence the authors are solely responsible for most of the changes and additions.

As in former editions the subject matter is divided into major sections. In its new format, general laboratory methods comprise the initial portion, clinical pathological methods the second part, bacteriological, mycological and virological methods the third. Following sections are devoted to parasitological technic and procedures while serological, chemical and pathological methods share in the same manner as final sections.

As is well known, this book presents one or more methods with detailed instruction for preparing animals, reagents, or apparatus or describes clearly any item involved in the doing. The illustrations, tables, headings of subject matter, extensive table of contents and an exhaustive index make accessible the enormous scope of subject matter in a manner seldom achieved by authors and publishers of such an extensive work. The explicit, concise and clear presentation of step-by-step methods of laboratory technic commend this established volume as unexcelled in its field.

While there are many new features worthy of comment the seven pages on the copper sulfate method for determination of

specific gravities of whole blood and plasma, with the correlated data on proteins, plasma volume, erythrocytometry and hemoglobinometry, as developed by the United States Navy Research Unit, are deserving of special mention. These procedures are not too elaborate and offer most pertinent information for the clinician.

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**PENICILLIN THERAPY** by John A. Kolmer, M.D. D. Appleton-Century Company, New York, 1945. Pp. 302. Price \$5.00.

This volume of several hundred pages arrives at an opportune time since it covers the antibiotics of therapeutic significance. The essentials of laboratory and clinical value relating to tyrothricin, the gramicidins, streptothricin, streptomycin, patulin and chlorophyll are discussed in a special section.

Penicillin in therapy, the main theme of Dr. Kolmer's treatise, has been adequately and informatively presented. The laboratory measures of control, clinical indications and methods of administration are discussed concisely. In an appendix there appear some modifications of subject matter of the main text, the most important of which relate to the effectiveness of penicillin by the oral route. It now is known, of course, that this antibiotic is highly effective by this route of administration, being largely absorbed in the upper segment of the small intestine and need only be protected from too high gastric acidity by appropriate antacids.

This treatise on Penicillin and other antibiotics is a valuable guide and reference source for everyone associated with modern medical practice.

## NEWS AND ANNOUNCEMENTS

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### REPORT ON THE BOARD OF DIRECTORS AND OFFICERS' MEETING at Muncie, Indiana, June 8 and 9, 1945

There were many smiles, much handshaking, and much mutual good will shown at the meeting in Muncie, Indiana, June 8 and 9, when members of the American Society of Medical Technologists met there from the various corners of the United States to settle problems and to do the business for the society. Miss Rose Matthaei, president of the society, presided at the several business sessions conducted on Friday and Saturday. Others in attendance were: Miss Mary Eichman, Pennsylvania; Sr. M. Alcuin, OSB, Minnesota; Miss Loretta Laughlin, Minnesota; Miss Hermine Tate, Louisiana; Mr. John Fitzgerald, Maine; Miss Henrietta Lyle, Pennsylvania; and Miss Rachel Lehman, Indiana. Other Indiana medical technologists near Muncie who came in to one or more of the meetings and participated in the various discussions were: Mrs. Hammes, Miss Marion Armstrong, Mrs. Helen Ketchum and Miss Isabelle Jeffrey.

The usual routine attendant on committee reports was discharged. Some of the pertinent facts from these reports are the following:

The executive secretary forwarded \$4,680.40 to the treasurer as representing dues and initiation fees collected from June 22, 1944, to April 30, 1945. The cash receipts in business office of the American Journal of Medical Technology were \$2,494.55 while the expenditures amounted to \$2,157.68 for the same period of time. The treasurer reports a cash balance on hand April 30, 1945, of \$4,537.86.

The Advisory Board investigated and approved two organizations for affiliation in 1944-1945. The Program committee after repeated efforts succeeded in obtaining seven papers from members

of the ASMT, which papers were turned over to Miss Bernice Elliott, chairman of the Awards committee for possible prizes and publication. Three papers were also submitted by medical technologists who are not members of the ASMT.

The Nominating committee recommended that the elected officers of the American Society of Medical Technologists (said officers having been duly elected by the House of Delegates in session June, 1944), remain status quo for the fiscal year 1945-1946 due to the inability of the House of Delegates to hold its usual session in 1945. It was the president's wish that the editor of the Journal be retained under the same condition.

Matters that were discussed with varying degrees of detail pertained to the financing of the executive secretary's office, the editorial policy of the journal and journal finances, the publishing of a roster of the membership of the society, the maintaining of the American Society of Medical Technologists as a Michigan corporation, and the plan of organization of the American Society of Medical Technologists.

It became very evident as the meetings followed each other that the society had advanced remarkably in numbers, and because of this increase in membership there was also an increase in the volume of business. While the executive office was operated at \$115 per month for clerical help, office rent, and sundry items of expense for the previous year it seemed imperative to allow \$175 per month for the same purposes for the year following. An increase in the number of issues of the Journal and the addition of eight pages to each issue called for more money allocated to the business office of the Journal. From \$650 the sum was advanced to \$1,000 per annum.

The American Society of Medical Technologists doubled, with a slight excess of seven members, its membership from July 1, 1944, to July 1, 1945. Its goal in the coming year is to double the present membership. As of April 30, 1945, the membership was 1,315 of which 55 were in the armed forces.

Among other goals set for the ensuing year were these two important ones, viz., the plan of organization of The American Society of Medical Technologists, and the execution of a well-organized educational plan under the auspices of the Educational committee

of the ASMT. A booklet of information concerning The American Society of Medical Technologists is being edited by the president, Miss Rose Matthaei, and with the help of The Registry of Medical Technologists of the American Society of Clinical Pathologists this is to be mailed to every registered medical technologist on the roster of the registry. The purpose of this booklet is to educate every medical technologist as to the relationship between the Registry and ASMT, and encourage every medical technologist in the nation to join the ASMT.

The plan of organization of the American Society of Medical Technologists was turned over to the Advisory Board for structural rearrangement. The unified structure is to consist of a federation of states, the states in turn to be made up of local societies (district) affiliated with the state societies.

A letter from Mrs. Evelyn Jardine expressed "no great hopes for H. R. 3147."

On several occasions Dr. Lall Montgomery and Mrs. Ruth Drummond met with the medical technologists. Dr. Lall Montgomery pointed out in response to a question concerning the financial status of medical technologists in the post war era that the medical technologists, pathologists, hospitals and communities in general all were involved in determining what trend salaries for medical technologists would take. Spot surveys, he stated, show that a significant increase in medical technologists' salaries has been enjoyed during the present war and indications are that salaries will not recede. The normal demand for medical technologists will hold salaries. But there will also follow an excess demand for the services of medical technologists because of: (1) Health insurance in which applicant has laboratory work done preparatorily, and hospital (e.g., Blue Cross) insurance in which the holder enjoys the privileges that come with the plan; (2) People (laity) conscious of laboratory work to an unprecedented degree; (3) Industry which has been walled in for the physical care of its worker; (4) Return of young medical doctors, a very great percentage of whom have had "free hand in laboratory demands" while in the armed services; and (5) War effort, in which ten to twelve million people have had laboratory work done and have sensitized the nation in this respect. Dr. Montgomery made refer-



ence to the statement that medical technology was born in World War I and became of age in World War II, and concluded this phase of discussion in his own words: "We haven't scratched the surface as yet."

Relative to the code of ethics for medical technologists Dr. Montgomery recommended that medical technologists define their position relative to their ethical problems and present their arguments to the Board of Registry for Medical Technologists of the ASCP for interpretation, clarification, and publication.

It was suggested by Dr. Montgomery that the title of American Board of Medical Technology be substituted for the Registry for Medical Technologists of the American Society of Clinical Pathologists.

It was recommended that The American Society of Medical Technologists co-operate with the Registry in encouraging ex-service men and women in medical technology to partake of the educational opportunities offered by the G. I. Bill of Rights in order that their academic background and practical training become such as to make them eligible to take, and successfully to pass the Registry examination. Furthermore it was recommended that the ASMT lend its full strength and co-operation in helping these men and women secure part time or full time work while they are preparing for their Registry examination. As far as their on-job was concerned, any ex-service medical technologist having worked under a qualified pathologist would receive full credit for time spent, as this type of service was the same as an apprenticeship. Dr. Montgomery pointed out. For all others, Dr. Montgomery pointed out still further, it would be necessary for them to eke out their practical training until they have met the Registry requirement. In other words, for non-registered medical technologists returning from the services there were two hurdles to pass, the pre-examination preparation, academic and practical, and the Registry examination.

The Saturday (June 9) morning meeting was called for the purpose of summarizing matters for voting by the Board. All motions and recommendations were forwarded in writing to every member of the Board and voting proceeded by mail immediately after the meeting.

It was one of the delights of the trip to Muncie to accept the invitation to visit the Registry for Medical Technologists of the ASCP. It was a greater delight to see the little brick dwelling wholly devoted to Registry activity, and to find it housed the files and clerical accessories, and made comfortable by Mrs. Drummond and her five secretaries while they discharged the duties that come from keeping in professional contact with over 11,000 medical technologists. Through the direction of Dr. Montgomery many inspirations are converted into action in the interests of medical technology and medical technologists in this central office.

Dr. Lall Montgomery and Mrs. Ruth Drummond invited the medical technologists assembled in Muncie, June 8, to a seven o'clock dinner at Hotel Roberts where all the assemblies were held. At this time a very pleasant social hour was passed and immediately following it some of the discussion of the afternoon was resumed and some of the policies and statistics of the Registry reviewed.

The general impression carried away from Muncie was that those officially representing the Registry, viz., Dr. Montgomery and Mrs. Drummond, gave a lion's share of their time and abilities during the medical technologists' stay in Muncie to promote the interests of medical technology. It was felt that much was accomplished in formulating plans for the success of the year 1945-1946 and it was evident that much had been accomplished by good teamwork between the Registry and the ASMT and by good teamwork within the society during the past year. Particularly outstanding was the work of the executive secretary, of the president, and Mrs. Evelyn Jardine. The impetus their noble examples of industry, courage, and generosity is bound to carry the society successfully through to 1946 when it is hoped an annual convention of all members may be held.

Respectfully submitted,

Sr. M. Alcon Arens, OSB,

Recording Secretary, ASMT

## REPORT OF AWARDS COMMITTEE

As the American Society of Medical Technologists was unable to hold a convention in 1945, the Program committee asked that all scientific papers be submitted by mail. These papers were turned over to the judging committee, which was composed of Miss Bernice Elliott, chairman; Dr. Ralph Stillman, of New York Hospital, New York (member of the Board of Registry); Dr. J. J. Andujar, Harris Memorial Methodist Hospital, Fort Worth, Texas.

The papers were judged by mail, and the chairman of the Awards committee makes the following announcement of the winners:

*First Place*—\$75 in War Bonds to Sister Eugene Marie. "The Rh Factor in Blood and Related Conditions."

*Second Place*—\$50 War Bond to Miss Sylvia Anderson. "Gastric Aspiration Culture and the Control of Tuberculosis."

*Third Place*—\$25 War Bond to Miss Margaret Davis. "An Evaluation of the Mazzini Slide Test."

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ATTENTION MEMBERS

Your support is required in urging the enactment of this bill—obtain support of your local medical organization and congressmen.

79th CONGRESS — 1st SESSION — H. R. 3147

IN THE HOUSE OF REPRESENTATIVES

May 8, 1945

Mr. Adams (by request) introduced the following bill; which was referred to the Committee on Military Affairs

A BILL to authorize the appointment of qualified medical technologists as commissioned officers in the Army of the United States and in the Naval Reserve.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there may be appointed as commissioned officers in the Army of the United States and in the Naval Reserve, for service with the Medical Department of the Army and the Medical Department of the Navy, respectively, such numbers of medical technologists as the*

Secretary of War and the Secretary of the Navy, respectively, may determine to be necessary. The qualifications prerequisite to such appointment shall be prescribed by the Secretary of War and the Secretary of the Navy, respectively, except that—

(1) any person registered as a medical technologist with the Registry of Medical Technologists of the American Society of Clinical Pathologists shall be considered as possessing the necessary professional qualifications; and

(2) any person who has satisfactorily completed a minimum of two years of college work in an accredited institution (such work to total at least sixty semester hours) which included—

(A) at least twelve semester hours of biology (not less than four of which consisted of zoology);

(B) at least eight semester hours of inorganic chemistry and at least four semester hours of laboratory work in connection therewith; and

(C) at least four semester hours of either quantitative analysis or organic chemistry, and at least one semester hour of laboratory work in connection therewith;

and who thereafter received instruction for a period of at least twelve months in all phases of medical technology in an approved training school for medical technologists or under the supervision of a qualified clinical pathologist, shall be considered as possessing the necessary professional qualifications. Graduation from an accredited nurses' training school shall, for the purposes of this paragraph, be deemed to constitute satisfactory completion of one year of college work in an accredited institution, and in the case of any such graduate, the other year of actual college work need only include, for the purposes of this paragraph, thirty semester hours of which eight semester hours shall be of biology and eight semester hours shall be of chemistry.

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#### POSTWAR JOBS IN MEDICAL OCCUPATIONS

Students, teachers, parents and others interested in medical occupations will find helpful information in three new six-page

Occupational Abstracts on *Medicine, Nursing, and Medical Laboratory Technologist*, just published by Occupational Index, Inc., New York University, New York 3, N. Y., at 25c each, or 75c for the three.

Each abstract covers the nature of the work, abilities and preparation required, entrance and advancement, earnings, number and distribution of workers, postwar prospects, advantages and disadvantages and sources of further information, including a select bibliography of the five best references.

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On the eve of infantile paralysis summer outbreaks, a recapitulation of the figures available, show that the number of poliomyelitis cases in the country is running about fifty per cent ahead of a year ago, it was announced today by Dr. Don W. Gudakunst, Medical Director of The National Foundation for Infantile Paralysis, Inc. As of mid-May, the number of new cases this year were 642 as compared with 424 cases for the same period in 1944.

Sharp increases have been reported in the New England states, Middle Atlantic states, South Atlantic area, and the East South Central states. In the Pacific Coast and West South Central areas which have been hard hit during the past two years, there has been a noticeable drop in the number of new cases. The remainder of the country is running about the same as last year.

While the fact that there are fifty per cent more cases in the country this year than in the same period in 1944, "this is not an alarming situation but it should be watched carefully," said Dr. Gudakunst. The Medical Director also declared that "The National Foundation, based on its experience of assisting in severe outbreaks of infantile paralysis during the past years, is in splendid condition to render real service to medical and public health authorities in an epidemic of infantile paralysis wherever it may occur. We stand ready and willing to help the state, county, and local health authorities at a moment's notice."

As a further aid in the fight against infantile paralysis, the National Foundation is distributing hundreds of thousands of bulletins entitled "When Polio Strikes" which includes many helpful hints for parents. It also contains a series of simple precautions to be taken by parents during the summer months.

*Minnesota*

The Minnesota Society of Medical Technologists held its annual convention at the Nicollet Hotel, Minneapolis, Minnesota, on May 5, 1945. The slate of newly elected officers are as follows:

President-elect.....	Eileen Smith, Minneapolis, Minn.
Vice-President.....	Fern Wagner, Minneapolis, Minn.
Secretary.....	Margaret Strane, St. Paul, Minn.
Treasurer.....	Zona Brandt, St. Paul, Minn.
Board Member.....	Catherine Hanitsch, Glen Lake, Minn.

Esther Wilbrecht, New Ulm, Minnesota, succeeds to the president's chair. Three Duluthians are represented on the board of directors.

A state-wide raffle project netted for the society a fund of \$300 which was voted to be set aside for professional promotion within the society's membership. The dues were left unaltered but a price of \$1 per annum was put on the Journal as its subscription cost.

Through the hard work of the various chairmen advancements were made in a number of fields, and among the most noteworthy is the work of the membership committee under the chairmanship of Frieda Claussen. The 1943-1944 census was 85 active members. At the date of the convention the roster recorded 172 active members. This is almost 100% of the state's M.T. (ASCP) and better than doubling the previous year's membership.

The features of most interest in the scientific program were a joint panel presenting the views of the eleven allied organizations of the Minnesota Hospital Association, Mr. C. Winbigler presenting the views of the medical technologists; a paper on Purpura and another on the culturing of tubercle bacilli. While the convention was restricted to a "delegate wartime conference" the attendance was gratifying.

## STATE AND LOCAL SOCIETIES

### THE PENNSYLVANIA SOCIETY OF MEDICAL TECHNOLOGISTS AND LABORATORY TECHNICIANS

The program for the past season 1944-45:

October—"Comparative Study of Guinea Pig Inoculation versus Cultures for Mycobacterium Tuberculosis." Dr. John T. Bauer, Pennsylvania Hospital. "Rh and Abnormal Agglutinins." Dr. John Howard, Misericordia Hospital.

November—Dinner meeting. Social.

December—"Role of the Laboratory Worker in the Post-War World." Salomen Weintraub, Chief of Laboratory Service, Major in Medical Corps.

January—"Schilling Index." Dr. Crocker, Philadelphia General Hospital.

February—"Intestinal Protozoa." Dr. Wm. G. Sawitz, Jefferson. "Malarial Parasites." Dr. Ed. S. Gault, Temple Hospital.

March—"Probability of Infection Among the Laboratory Workers." Dr. Fr. Lynch, Germantown Hospital. "Nephritis, Laboratory Diagnosis." Dr. Wm. P. Belk, Episcopal Hospital.

April—"False Positive Serologic Tests for Syphilis." Dr. Herman Beerman, University Hospital. "A Fixation of Complement Test for the Diagnosis of Syphilis, Malaria, Leptospira, Echinococcus Disease, Gonorrhoea and Other Bacterial and Viral Diseases." Dr. Fred Boerner, V.M.D., and Marguerite Lukens, A.B., M.T. (ASCP), Grad. Hosp., University of Pennsylvania. "Serological Evaluation in Pennsylvania," Penna. Dept. of Health Lab.

May—"Bacteriological Discussion." Dr. Leland Brown from Leland Brown Laboratories. "Why An Autopsy Is Done." Dr. Oscar N. Rambo, Hahnemann Hospital.

Submitted by R. D. Antonucci, M.T. (ASCP), chairman of the Program Committee, 731 N. 64th St., Philadelphia 31, Pa.

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### THE PENNSYLVANIA SOCIETY OF MEDICAL TECHNOLOGISTS AND LABORATORY TECHNICIANS

Affiliated with



## American Society of Medical Technologists

1945-'46

Regular Meetings: Second Monday of each month.

## OFFICERS

Elsa Lynch, M.T. (ASCP).....President  
 Henrietta Lyle, M.T. (ASCP).....President-Elect  
 Dorothea Windisch .....Recording Secretary  
 Rose Antonucci, M.T. (ASCP).....Treasurer  
 Anne Caverly, M.T. (ASCP).....Corresponding Secretary  
 5000 Pulaski Ave., Philadelphia 44, Pa.

Ellen M. McDevitt, M.T. (ASCP).....Advisory Board  
 Kathleen C. Bradley, M.T. (ASCP).....Advisory Board  
 Mary Eichman, M.T. (ASCP).....Advisory Board  
 Dr. Wm. Sunderman, Univ. of Pa. ....Hon. Advisory Board  
 Dr. Walter Crocker, Phila. Gen. Hosp. ....Hon. Advisory Board

OMAHA-COUNCIL BLUFFS SOCIETY OF MEDICAL  
TECHNOLOGISTS

Not affiliated with

American Society of Medical Technologists

1945-'46

Regular Meetings: Bi-monthly. Third Wednesday.

## OFFICERS

Rosemary McLennon, M.T. (ASCP).....President  
 Elilie Blazek .....Secretary  
 1469 S. Sixteenth St., Omaha, Nebraska

OKLAHOMA CITY SOCIETY OF MEDICAL  
TECHNOLOGISTS

Affiliated with

American Society of Medical Technologists

1945

Regular Meetings: Monthly (Second Tuesday)

## OFFICERS

Vernal Johnson, M.T. (ASCP).....President  
 Edna Deupree, M.T. (ASCP).....Vice-President  
 Kay Hutcherson, M.T. (ASCP).....Treasurer  
 Dorothy Foreman, M.T. (ASCP).....Secretary  
 c/o University Hospital, Oklahoma City, Okla.

Program for the remaining meetings are:

June—Picnic.

August—Social.

September—"Allergy." Dr. P. M. McNeill, Oklahoma City.

October—"Mycology." Dr. John Lamb, Oklahoma City.

November—Round table discussion of problems.

December—Election of officers and dinner.

### THE TULSA ROUND TABLE OF MEDICAL TECHNOLOGISTS\*

Not affiliated with

American Society of Medical Technologists

\*Affiliated with the Oklahoma City Society of Medical Technologists

Regular Meetings: Bi-monthly.

#### OFFICERS

H. L. Spencer, M.T. (ASCP).....President

Ida Lucille Wallace, M.T. (ASCP).....Vice-President

Mrs. Elizabeth Goltry Johnson, M.T. (ASCP).....Secy.-Treasurer

401 Medical Arts Bldg., Oklahoma City 2, Oklahoma

All of the officers of the Tulsa Round Table of Medical Technologists are members of the American Society of Medical Technologists, and the goal of this organization is to enroll every Tulsa Medical Technologist in the American Society.

The Tulsa Round Table of Medical Technologists have had a very active year.

In January they entertained with a reception in honor of the faculty and students of the course in Medical Technology from the University of Tulsa. Fifty members and guests were present. The program consisted of short talks on the various phases and opportunities of Medical Technology such as hospital work, group clinics, public health, industrial plants, biological houses, commercial laboratories, and etc. This meeting was held in the staff room of the St. John's Hospital.

February took the group to the University of Tulsa where four Medical Technologists from the City Health Department entertained. "Laboratory Aspects of Drunken Driving," by Mr. H. L. Spencer, the Director of the City Health Dept. Laboratories, was the subject of the evening, followed by a social hour.

The March meeting as guests of the laboratory staff of the Hillcrest Memorial Hospital were presented to a lecture and colored slides of five cases of various types of leukemia, by Dr. Leo Lowbeer, the pathologist of the hospital. Three new members were welcome with the refreshments.

The April meeting was held at St. John's Hospital and consisted of a business meeting to discuss plans for the State meeting in the fall. A nominating committee was appointed by the president. The May meeting was sponsored by all the Medical Technologists who work in the downtown district and held at the Springer Clinic. The program was in the form of a seminar for discussing new laboratory techniques. New officers were elected.

The June meeting is social for all members, pathologists and students.

#### OKLAHOMA SOCIETY OF MEDICAL TECHNOLOGISTS

Affiliated with

American Society of Medical Technologists

1945

Regular Meetings: Semi-annual (June and October)

##### OFFICERS

Oscar Edgar Stewart, M.T. (ASCP).....President

Kathryn Aderhold, M.T. (ASCP).....Vice-President

Muriel Haines, M.T. (ASCP).....Secretary-Treasurer

Hazel Clay, M.T. (ASCP).....Corresponding Secretary

514 Northwest 24th St., Apt. 7, Oklahoma City 3, Okla.

#### NIAGARA FRONTIER ASSOCIATION OF MEDICAL TECHNOLOGISTS

Affiliated with

American Society of Medical Technologists

1945-'46

Regular Meetings: Monthly (Second Wednesday)

##### OFFICERS

(To be installed October, 1945)

Margaret Moore, M.T. (ASCP).....President

Mrs. June Hood Chittenden, M.T. (ASCP).....President-Elect

Eileen Hughes, M.T. (ASCP).....Treasurer

Betty Deuchler, M.T. (ASCP).....Recording Secretary

Alice Sprague, M.T. (ASCP).....Corresponding Secretary

110 Merrimac, Buffalo 14, New York

## THE OHIO SOCIETY OF MEDICAL TECHNOLOGISTS

Affiliated with

American Society of Medical Technologists

1945

Regular Meetings: Semi-annual (Spring and Fall)

War-time Meetings: Annual (Spring)

## OFFICERS

Kathryn Teeple, M.T. (ASCP).....President

Betty Soliday, M.T. (ASCP).....Acting Vice-President

Lois Jane Scheffler.....Acting Secretary-Treasurer

114 W. Burns Avenue, Akron, Ohio

The Ohio Society of Medical Technologists will not hold a convention this year to comply with the request of the O.D.T. The publication of the Bulletin for members has been uninterrupted. A campaign for membership is on and the chairman is Miss Betty Soliday, M.T. (ASCP), 225 Michigan Street, Toledo, Ohio.

## WESTERN PENNSYLVANIA CHAPTER

of the

## PENNSYLVANIA SOCIETY OF MEDICAL TECHNOLOGISTS AND LABORATORY TECHNICIANS

Affiliated with

American Society of Medical Technologists

Through the P. S. M. T. &amp; L. T.

1945-'46

Regular Meetings: Monthly

(Third Tuesday evening; Third Saturday afternoon)

Wartime Meetings: Bi-monthly.

## OFFICERS

Helen Brumbough, M.T. (ASCP).....President

Romaine Teufel, M.T. (ASCP).....President-Elect

Marie Gray, M.T. (ASCP).....Recording Secretary

Sr. M. Salome Nolte, M.T. (ASCP).....Treasurer

Dorothy Flohr, M.T. (ASCP).....Corresponding Secretary

308 Lavine Ave., Mt. Lebanon, Pittsburgh, Pa.

PROGRAM 1944-'45

October—Place: Butler, Pa. Tour through Deshon Hospital, U. S. Army.

November—Place: Mercy Hospital, Pittsburgh, Pa. "Learning from the Dead," by Dr. R. J. Simon, Assistant Pathologist.

December—Place: West Penn Hospital, Pittsburgh, Pa. "Rh Factor" by Mrs. B. B. Carter, Lab. Tech.

January—Place: School of Pharmacy, Duquesne University, Pittsburgh, Pa. "New Horizon" by Dean H. C. Muldoon. Also a banquet.

February—Place: Bureau of Mines, Pittsburgh, Pa. "Poisonous Gases" by H. H. Schrenk, Ph. D.

March—Place: University of Pittsburgh. "Chemotherapy of Drugs" by B. F. Daubert, Ph. D.

April—Place: Chemical Research Dept. of the Horgan, Inc., Pittsburgh, Pa. "Deproteination of Chemical Specimens" by A. A. Horvath, Ph. D.

May—Installation of Officers.

June—Place: Montefiore Hospital, Pittsburgh, Pa. "Clinical Evaluation of Liver Function Tests" by Dr. K. Yardumain, Pathologist.

## MINNESOTA SOCIETY OF MEDICAL TECHNOLOGISTS

Affiliated with  
American Society of Medical Technologists

1945-'46

Regular Meetings: Annually (May)

### OFFICERS

Esther Wilbrecht, M.T. (ASCP)	President
Eileen Smith, M.T. (ASCP)	President-Elect
Fern Wagner, M.T. (ASCP)	Vice President
Zona Brandt, M.T. (ASCP)	Treasurer
Sister Alcuin (Arens), M.T. (ASCP)	Board '46
Eleanor Eggleston, M.T. (ASCP)	Board '47
Catherine Hanitch, M.T. (ASCP)	Board '48
Chauncey Winbigler, M.T. (ASCP)	Past-President
Margaret Strane, M.T. (ASCP)	Secretary

c/o Miller Hospital, St. Paul 2, Minnesota

## CHICAGO SOCIETY OF MEDICAL TECHNOLOGISTS

Affiliated with

American Society of Medical Technologists

1945-'46

Regular Meetings: Monthly (Third Thursday)

## OFFICERS

Helen E. Sunderland, M.T. (ASCP).....	President
Myron P. Gaddie, M.T. (ASCP).....	Vice-President
Louise M. Vance, M.T. (ASCP).....	Treasurer
Joyce James, M.T. (ASCP).....	Secretary

939 N. LaSalle Street, Chicago 10, Illinois

## PROGRAM FOR 1944-'45

October—Place: Henrotin Hospital. Moving picture, "Human Sterility," by Mr. John C. Campbell, courtesy of Winthrop Chemical Co.

November—Place: Cook County Hospital, Hematology Department. "Leukemia." Demonstration and lecture by Dr. S. O. Schwartz.

December—Place: "The Ranch." Social.

February—Place: Northwestern University. Discussion on Penicillin by Drs. Farmer and Youmans. Conducted and supervised tour of Penicillin Research Unit.

March—Place: Intensive Treatment Center. Conducted tour and talk by Dr. Shemlein.

April—Place: Abbott Laboratory at Evanston Hospital, Evanston, Ill. "The Effects of Sulfa Drugs with Emphasis on the Urine Changes and Blood Picture," by Dr. Martin Seifert.

May—Place: St. Vincent's Infant and Maternity Hospital. "Returning Soldiers, Tropical Disease and the Medical Technologist," Marion Baker, M.T. (ASCP); also "Technique for Determining the Rh Factor," lecture and demonstration by Dr. I. Davidsohn.

**ARKANSAS**

Society Name	Chartered	Meetings	Secretary's Address
Arkansas Society of M.T.	National	Quarterly	Ann Snow, M.T. 216 East D. Ave., Park Hill, N. Little Rock, Ark.
Little Rock Society of M.T. Pres.—Marcella Drilling	State	Quarterly	Lila Church, M.T. 2116 Orange Street N. Little Rock, Ark.

**CALIFORNIA**

California Ass'n of M.T. (Santa Barbara Chapter) Pres.—Grace P. Butera	None	Monthly	Florence Connely 317 W. Pueblo Street Santa Barbara, Calif.
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**COLORADO**

Colorado Society of M.T. Pres.—Mabel O. Stewart	National	Monthly	Annalee Bresford, M.T. 1560 High Street Denver, Colorado
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**DISTRICT OF COLUMBIA**

District of Columbia Society of M.T. Pres.—Zanerian E. Funk	National	Monthly	Evelyn F. Ballou, M.T. 4105 Third Street N.W. Washington, D. C.
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**GEORGIA**

Savannah Society of M.T. Pres.—Sadie Cartwright	National	Monthly	Jurelle S. Hooper, M.T. 20 East 56th Street Savannah, Georgia
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**ILLINOIS**

Illinois Society of Clinical Laboratory Technicians Pres.—Fannie Warnock	National	Semi-annual	Edna H. Murmann, M.T. 3924 N. Monticello Ave. Chicago, Illinois
Chicago Society of M.T. Pres.—Helen E. Sunderland	National	Monthly	Joyce James, M.T. 939 North LaSalle Street Chicago 10, Illinois

**INDIANA**

Indiana State Society of M.T. Pres.—Virginia Sue Alley	National	Annual	Hazel Childs, M.T. Indianapolis City Hospital Indianapolis, Indiana
Indianapolis Society of M.T. Pres.—Nila Maze	National	Monthly	Ruth E. Trotter, M.T. 651 East Dr., Woodruff Place Indianapolis, Indiana

**KENTUCKY**

Kentucky Society of M.T.	National	Monthly	Dorothea Distler, M.T. 860 Eastern Parkway Louisville, Kentucky
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**LOUISIANA**

Society Name	Chartered	Meetings	Secretary's Address
Caddo Parish Society of M.T. of Shreveport Pres.—A. Merlin McKinnon	None	Monthly	Harriet Cypert, M.T. Barksdale Field Hosp. Lab. Barksdale Field, Louisiana

**MASSACHUSETTS**

Worcester District of M.T. Pres.—Marjorie Inman	National	Monthly	Jane C. Zalesda, M.T. 16 Montrose Street Worcester, Massachusetts
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**MINNESOTA**

Minnesota Society of M.T. Pres.—Esther Willbrecht	National	Annual	Margaret Strane, M.T. Miller Hospital St. Paul 2, Minnesota
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**NEBRASKA**

Nebraska Society of M.T. Pres.—Romona Forbes	National	Annual	Marjorie Lundeen Lincoln General Hospital Lincoln, Nebraska
Omaha-Council Bluffs Society of M.T. Pres.—Rosemary McLennon	None	Bi-monthly	Elilie Blazek, M.T. (ASCP) 1469 So. Sixteenth St. Omaha, Nebraska

**NEW HAMPSHIRE**

New Hampshire Society of M.T. Pres.—Sister Marie-Rose (Larivee)	None	Annual	Marion P. MacMartin, M.T. Mary Hitchcock Mem. Hosp. Hanover, New Hampshire
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**NEW JERSEY**

New Jersey Society of M.T. Pres.—Phyllis Stanley	None	Annual	Elsie Emmel, M.T. 304 Washington St. Glen Ridge, New Jersey
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**NEW YORK**

Niagara Frontier Assn. of M.T. Pres.—Margaret Moore	National	Monthly	Alice Sprague, M.T. 110 Merrimac Buffalo 14, New York
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**OHIO**

Ohio Society of M.T. Pres.—Kathryn Teeple	National	Annual	Lois Jane Scheffler 114 West Burns Ave. Akron, Ohio
Ohio Society of Clinical Lab- oratory Technicians, Dist. 1 Pres.—Jean Jones	None	Semi-annual	Patricia Nolan, M.T. c/o City Hospital Akron, Ohio

**OKLAHOMA**

Society Name	Chartered	Meetings	Secretary's Address
Oklahoma State Society of M.T. Pres.—Oscar E. Stewart	National	Semi-annual	Hazel Clay, M.T. 514 North West 24th Street Oklahoma City 3, Okla.
Oklahoma City Society of M.T. Pres.—Vernal Johnson	State	Monthly	Dorothy Foreman, M.T. Universal Hospital Oklahoma City, Oklahoma
Tulsa Round Table of M.T. Pres.—H. L. Spencer	State	Bi-monthly	Mrs. Eliz. Goltry Johnson 401 Medical Arts Bldg. Oklahoma City 2, Okla.

**PENNSYLVANIA**

Pennsylvania Society of M.T. Pres.—Elsa Lynch	National	Monthly	Ann Caverly, M.T. 5000 Pulaski Ave. Philadelphia 44, Pennsylvania
Western Pennsylvania Chapter of P. S. M.T. Pres.—Helen Brumbough	State	Monthly	Dorothy Flohr, M.T. 308 Lavina Ave. Mt. Lebanon, Pittsburgh, Pa

**TEXAS**

Texas Society of M.T.	National	Monthly	Esther Stork, M.T. 3123 Hemphill Drive Austin, Texas
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**WASHINGTON**

Inland Empire Society of M.T. Pres.—Frances Premo	None	Annual	Lenore De Vor East 547 Gordon Spokane, Washington
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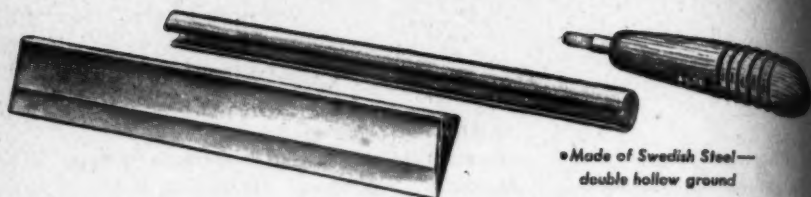
**WISCONSIN**

Wisconsin Association of M.T. Pres.—Alice A. Thorngate	National	Semi-annual	Mrs. Eliz. Kullman, M.T. 2460 So. 59th Street Milwaukee, Wisconsin
Wisconsin Association of M.T. Milwaukee District Pres.—Dorothy Zoeller	State	Monthly	Esther Lemont, M.T. 2618 North Summit Ave. Milwaukee, Wisconsin

CECELIA M. KORTUEM, R.N., M.T. (ASCP)

Editorial Staff

American Journal of Medical Technology



## New! ALOE Handmade Microtome Knives

*Scientifically designed to hold a uniform edge*

This new series of Aloe microtome knives combine the most advanced developments in the manufacture of knives for accurate, rapid sectioning. Their construction provides a well balanced knife that will maintain a uniform cutting edge under all conditions.

Aloe knives are individually made of fine Swedish steel, tempered throughout. Edges are double hollow ground to give the knives proper balance. With this improved design the knife is

honed more easily and holds a narrow beveled edge much longer. All sizes are used in general work, but Size C is especially recommended for bone and soft sections and Size D for large celloidin sections.

**JLS9900**—Aloe Handmade Microtome Knives, complete with back, handle and wood case.

Size.....	A	B	C	D
Length, mm.	120	185	250	300
Each.....	\$20.00	\$30.00	\$44.00	\$54.00

**A . S . ALOE COMPANY**

1831 Olive Street • St. Louis, Mo.



### ANNOUNCEMENT

The fall examination of candidates for certification by the Registry of Medical Technologists of the American Society of Clinical Pathologists will be given on October 26, 1945.

The closing date for acceptance of applications will be September 1. All candidates are urged to submit their applications as soon as possible, so that there will be no delay in establishing their eligibility to take the examination.

Application blanks may be obtained by writing to:

REGISTRY OF MEDICAL TECHNOLOGISTS  
of the  
AMERICAN SOCIETY OF CLINICAL PATHOLOGISTS

Ball Memorial Hospital  
Muncie, Indiana

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